

Permit No. **VA0089338**
Effective Date:
Expiration Date:

AUTHORIZATION TO DISCHARGE UNDER THE
VIRGINIA POLLUTANT DISCHARGE ELIMINATION SYSTEM
AND THE VIRGINIA STATE WATER CONTROL LAW

In compliance with the provisions of the Clean Water Act as amended and pursuant to the State Water Control Law and regulations adopted pursuant thereto, the following owner is authorized to discharge in accordance with the information submitted with the permit application, and with this permit cover page, Part I – Effluent Limitations and Monitoring Requirements, and Part II – Conditions Applicable To All VPDES Permits, as set forth herein.

Owner Name: King George County Service Authority
Facility Name: Hopyard Farms WWTP
County: King George
Facility Location: State Route 607, 1 mile south of the intersection of Route 3 and Route 607

The owner is authorized to discharge to the following receiving stream:

Stream Name: Rappahannock River
River Basin: Rappahannock River
River Subbasin: None
Section: 1
Class: II
Special Standards: a

Thomas A. Faha
Director, Northern Regional Office
Department of Environmental Quality

Date

A. Effluent Limitations and Monitoring Requirements**1. Outfall 001 – 0.375 MGD Facility**

- a. There shall be no discharge of floating solids or visible foam in other than trace amounts.
- b. This facility has Total Nitrogen and Total Phosphorus calendar year load limits associated with this outfall included in the current Registration List under registration number VAN020056, enforceable under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Dischargers and Nutrient Trading in the Chesapeake Watershed in Virginia.
- c. During the period beginning with the permit's effective date and lasting until the expiration date or the issuance of the CTO for the 0.5 MGD facility, whichever occurs first, the permittee is authorized to discharge from Outfall Number 001. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations					Monitoring Requirements		
	<u>Monthly Average</u> ⁽¹⁾		<u>Weekly Average</u> ⁽¹⁾		<u>Minimum</u>	<u>Maximum</u> ⁽¹⁾	<u>Frequency</u>	<u>Sample Type</u>
Flow ⁽²⁾ (MGD)	NL		NA		NA	NL	Continuous	TIRE
pH	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
BOD ₅	30 mg/L	43 kg/day	45 mg/L	64 kg/day	NA	NA	5D/W	8H-C
Total Suspended Solids, TSS	30 mg/L	43 kg/day	45 mg/L	64 kg/day	NA	NA	5D/W	8H-C
Ammonia as N (May-Oct)	11 mg/L		14 mg/L		NA	NA	5D/W	8H-C
Ammonia as N (Nov-Apr)	12 mg/L		16 mg/L		NA	NA	5D/W	8H-C
Total Kjeldahl Nitrogen, TKN	NL (mg/L)		NA		NA	NA	1/2W	8H-C
Nitrate+Nitrite, as N	NL (mg/L)		NA		NA	NA	1/2W	8H-C
Total Nitrogen ⁽³⁾	NL (mg/L)		NA		NA	NA	1/2W	Calculated
Total Nitrogen – Year to Date ⁽⁴⁾	NL (mg/L)		NA		NA	NA	1/M	Calculated
Total Nitrogen – Calendar Year ⁽⁴⁾	8.0 mg/L		NA		NA	NA	1/YR	Calculated
Dissolved Oxygen	NA		NA		6.0 mg/L	NA	1/D	Grab
<i>E. coli</i> (Geometric Mean)	126 n/100 mLs		NA		NA	NA	5D/W*	Grab
Total Phosphorus	2.0 mg/L	63 lb/day	NA		NA	NA	1/2W	8H-C

⁽¹⁾ See Part I.B.

MGD = Million gallons per day.

1/D = Once every day.

⁽²⁾ The design flow is 0.375 MGD.

NA = Not applicable.

5D/W = Five days a week.

⁽³⁾ Total Nitrogen is the sum of Total Kjeldahl Nitrogen and NO₂+NO₃ Nitrogen and shall be calculated from the results of those tests.

NL = No limit; monitor and report.

1/2W = Once every two weeks, >7 days apart.

⁽⁴⁾ See Part I.B.3. for nutrient reporting calculations.

S.U. = Standard units.

1/M = Once every month.

TIRE = Totalizing, indicating and recording equipment.

1/YR = Once every year.

8H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 8-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of eight (8) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of eight (8) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by 10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

* Between 10:00 a.m. and 4:00 p.m.

A. Effluent Limitations and Monitoring Requirements**2. Outfall 001 – 0.5 MGD Facility**

- a. There shall be no discharge of floating solids or visible foam in other than trace amounts.
- b. In addition to any Total Nitrogen or Total Phosphorus concentration limits (or monitoring requirements without associated limits) listed below, this facility has Total Nitrogen and Total Phosphorus calendar year load limits associated with this outfall included in the current Registration List under registration number VAN020056, enforceable under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Dischargers and Nutrient Trading in the Chesapeake Watershed in Virginia.
- c. During the period beginning with the issuance of the CTO for the 0.5 MGD facility and lasting until the permit's expiration date, the permittee is authorized to discharge from Outfall Number 001. Such discharges shall be limited and monitored by the permittee as specified below.

Parameter	Discharge Limitations					Monitoring Requirements		
	<u>Monthly Average</u> ⁽¹⁾		<u>Weekly Average</u> ⁽¹⁾		<u>Minimum</u>	<u>Maximum</u> ⁽¹⁾	<u>Frequency</u>	<u>Sample Type</u>
Flow ⁽²⁾ (MGD)	NL		NA		NA	NL	Continuous	TIRE
pH	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
BOD ₅	30 mg/L	57 kg/day	45 mg/L	85 kg/day	NA	NA	5D/W	8H-C
Total Suspended Solids, TSS	30 mg/L	57 kg/day	45 mg/L	85 kg/day	NA	NA	5D/W	8H-C
Ammonia as N (May-Oct)	11 mg/L		14 mg/L		NA	NA	5D/W	8H-C
Ammonia as N (Nov-Apr)	12 mg/L		16 mg/L		NA	NA	5D/W	8H-C
Dissolved Oxygen	NA		NA		6.0 mg/L	NA	1/D	Grab
<i>E. coli</i> (Geometric Mean)	126 n/100 mLs		NA		NA	NA	5D/W*	Grab
Total Kjeldahl Nitrogen, TKN	NL (mg/L)		NA		NA	NA	1/2W	8H-C
Nitrate+Nitrite, as N	NL (mg/L)		NA		NA	NA	1/2W	8H-C
Total Nitrogen ⁽³⁾	NL (mg/L)		NA		NA	NA	1/2W	Calculated
Total Nitrogen – Year to Date ⁽⁴⁾	NL (mg/L)		NA		NA	NA	1/M	Calculated
Total Nitrogen – Calendar Year ⁽⁴⁾	4.0 mg/L		NA		NA	NA	1/YR	Calculated
Total Phosphorus	NL (mg/L)		NA		NA	NA	1/D	8H-C
Total Phosphorus – Year to Dat e ⁽⁴⁾	NL (mg/L)		NA		NA	NA	1/M	Calculated
Total Phosphorus – Calendar Year ⁽⁴⁾	0.30 mg/L		NA		NA	NA	1/YR	Calculated

(1) See Part I.B.

MGD = Million gallons per day.

1/D = Once every day.

(2) The design flow is 0.5 MGD.

NA = Not applicable.

5D/W = Five days a week.

(3) Total Nitrogen is the sum of Total Kjeldahl Nitrogen and NO₂+NO₃ Nitrogen and shall be calculated from the results of those tests.

NL = No limit; monitor and report.

1/2W = Once every two weeks, >7 days apart.

S.U. = Standard units.

1/M = Once every month.

TIRE = Totalizing, indicating and recording equipment.

1/YR = Once every year.

(4) See Part I.B.3. for nutrient reporting calculations. The calendar year annual averages for Total Nitrogen and Total Phosphorus are effective January 1st of the year after issuance of the CTO for the expanded facility.

8H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 8-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of eight (8) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of eight (8) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by 10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

* Between 10:00 a.m. and 4:00 p.m.

B. Quantification Levels and Compliance Reporting

1. Quantification Levels

- a. The quantification levels (QL) shall be less than or equal to the following concentrations:

<u>Characteristic</u>	<u>Quantification Level</u>
TSS	1.0 mg/L
BOD ₅	2 mg/L
Ammonia	0.20 mg/L

- b. The QL is defined as the lowest concentration used to calibrate a measurement system in accordance with the procedures published for the method. The permittee shall use any method in accordance with Part II A of this permit.
- c. It is the responsibility of the permittee to ensure that proper quality assurance/quality control (QA/QC) protocols are followed during the sampling and analytical procedures. QA/QC information shall be documented to confirm that appropriate analytical procedures have been used and the required QLs have been attained.

2. Compliance Reporting for parameters in Part I.A.

- a. **Monthly Average** –Compliance with the monthly average limitations and/or reporting requirements for the parameters listed in Part I.B. 1.a of this permit condition shall be determined as follows: All concentration data below the QL used for the analysis (QL must be less than or equal to the QL listed in Part I.B. 1.a above) shall be treated as zero. All concentration data equal to or above the QL used for the analysis (QL must be less than or equal to the QL listed in Part I.B.2.a above) shall be treated as it is reported. An arithmetic average shall be calculated using all reported data for the month, including the defined zeros. This arithmetic average shall be reported on the Discharge Monitoring Report (DMR) as calculated. If all data are below the QL used for the analysis (QL must be less than or equal to the QL listed in Part I.B.2.a above), then the average shall be reported as "<QL". If reporting for quantity is required on the DMR and the reported monthly average concentration is <QL, then report "<QL" for the quantity. Otherwise use the reported concentration data (including the defined zeros) and flow data for each sample day to determine the daily quantity and report the monthly average of the calculated daily quantities.
- b. **Maximum Weekly Average** –Compliance with the weekly average limitations and/or reporting requirements for the parameters listed in Part I.B.1.a of this permit condition shall be determined as follows: All concentration data below the QL used for the analysis (QL must be less than or equal to the QL listed in Part I.B.1.a above) shall be treated as zero. All concentration data equal to or above the QL used for the analysis (QL must be less than or equal to the QL listed in Part I.B.2.a above) shall be treated as reported. An arithmetic average shall be calculated using all reported data, including the defined zeros, collected within each complete calendar week and entirely contained within the reporting month. The maximum value of the weekly averages thus determined shall be reported on the DMR. If all data are below the QL used for the analysis (QL must be less than or equal to the QL listed in Part I.B.2.a above), then the weekly average shall be reported as "<QL". If reporting for quantity is required on the DMR and the reported weekly average concentration is <QL, then report "<QL" for the quantity. . Otherwise use the reported concentration data (including the defined zeros) and flow data for each sample day to determine the daily quantity and report the maximum weekly average of the calculated daily quantities.

- c. Single Datum - Any single datum required shall be reported as "<QL" if it is less than the QL used in the analysis (QL must be less than or equal to the QL listed in Part I.B. 1.a above). Otherwise the numerical value shall be reported.
- d. Significant Digits - The permittee shall report at least the same number of significant digits as the permit limit for a given parameter. Regardless of the rounding convention used (i.e., 5 always rounding up or to the nearest even number) by the permittee, the permittee shall use the convention consistently, and shall ensure that consulting laboratories employed by the permittee use the same convention.
- e. Geometric Mean – Compliance with the monthly geometric mean shall be determined as follows: All bacteria data below the Limit of Quantitation (LOQ) or Practical Quantification Limit (PQL) of the measurement method shall be treated as the LOQ or the PQL. All concentration data equal to or above the LOQ or the PQL shall be treated as it is reported. A geometric mean shall be calculated using all reported data for the month. If all data are below the LOQ or the PQL, then the geometric mean shall be reported as "< LOQ value" or "< PQL value".

3. Nutrient Reporting Calculations for Part I. A.

- a. For each calendar month, the DMR shall show the calendar year-to-date average concentration (mg/L) calculated in accordance with the following formulae:

$$MC_{avg}\text{-YTD} = (\sum_{(\text{Jan-current month})} MC_{avg}) \div (\# \text{ of months})$$

where:

$MC_{avg}\text{-YTD}$ = calendar year-to-date average concentration (mg/L)

MC_{avg} = monthly average concentration (mg/L) as reported on DMR

- b. The total nitrogen and phosphorus average concentrations (mg/L) for each calendar year (AC) shall be shown on the December DMR due January 10th of the following year. These values shall be calculated in accordance with the following formulae:

$$AC_{avg} = (\sum_{(\text{Jan-Dec})} MC_{avg}) \div 12$$

where:

AC_{avg} = calendar year average concentration (mg/L)

MC_{avg} = monthly average concentration (mg/L) as reported on DMR

- c. For Total Phosphorus, all daily concentration data below the quantification level (QL) for the analytical method used should be treated as half the QL. All daily concentration data equal to or above the QL for the analytical method used shall be treated as it is reported.
- d. For Total Nitrogen (TN), if none of the daily concentration data for the respective species (i.e., TKN, Nitrates/Nitrites) are equal to or above the QL for the respective analytical methods used, the daily TN concentration value reported shall equal one half of the largest QL used for the respective species. If one of the data is equal to or above the QL, the daily TN concentration value shall be treated as that data point is reported. If more than one of the data is above the QL, the daily TN concentration value shall equal the sum of the data points as reported.

C. Other Requirements and Special Conditions

1. 95% Capacity Reopener

A written notice and a plan of action for ensuring continued compliance with the terms of this permit shall be submitted to the DEQ-Northern Regional Office (DEQ-NRO) when the monthly average flow influent to the sewage treatment plant reaches 95 percent of the design capacity authorized in this permit for each month of any three consecutive month period. The written notice shall be submitted within 30 days and the plan of action shall be received at the DEQ-NRO no later than 90 days from the third consecutive month for which the flow reached 95 percent of the design capacity. The plan shall include the necessary steps and a prompt schedule of implementation for controlling any current or reasonably anticipated problem resulting from high influent flows. Failure to submit an adequate plan in a timely manner shall be deemed a violation of this permit.

2. Indirect Dischargers

The permittee shall provide adequate notice to the Department of the following:

- a. Any new introduction of pollutants into the treatment works from an indirect discharger which would be subject to Section 301 or 306 of Clean Water Act and the State Water Control Law if it were directly discharging those pollutants; and
- b. Any substantial change in the volume or character of pollutants being introduced into the treatment works by a source introducing pollutants into the treatment works at the time of issuance of this permit.
- c. Adequate notice shall include information on (i) the quality and quantity of effluent introduced into the treatment works, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the treatment works.

3. Operation and Maintenance (O&M) Manual Requirement

The permittee shall maintain a current Operations and Maintenance (O&M) Manual for the treatment works that is in accordance with Virginia Pollutant Discharge Elimination System Regulations, 9VAC25-31 and (for sewage treatment plants) Sewage Collection and Treatment Regulations, 9 VAC 25-790.

The O&M Manual and subsequent revisions shall include the manual effective date and meet Part II.K.2 and Part II.K.4 Signatory Requirements of the permit. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M manual available to Department personnel for review during facility inspections. Within 30 days of a request by DEQ, the current O&M Manual shall be submitted to the DEQ-NRO for review and approval.

The O&M manual shall detail the practices and procedures which will be followed to ensure compliance with the requirements of this permit. This manual shall include, but not necessarily be limited to, the following items, as appropriate:

- a. Permitted outfall locations and techniques to be employed in the collection, preservation, and analysis of effluent, storm water and sludge samples;
- b. Procedures for measuring and recording the duration and volume of treated wastewater discharged;
- c. Discussion of Best Management Practices, if applicable;
- d. Procedures for handling, storing, and disposing of all wastes, fluids, and pollutants that will prevent these materials from reaching state waters. List type and quantity of wastes, fluids, and pollutants (e.g. chemicals) stored at this facility;
- e. Discussion of treatment works design, treatment works operation, routine preventative maintenance of units within the treatment works, critical spare parts inventory and record keeping;
- f. Plan for the management and/or disposal of waste solids and residues;
- g. Hours of operation and staffing requirements for the plant to ensure effective operation of the treatment works and maintain permit compliance;

- h. List of facility, local and state emergency contacts; and
- i. Procedures for reporting and responding to any spills/overflows/ treatment works upsets.

4. Licensed Operator Requirement

The permittee shall employ or contract at least one Class II licensed wastewater works operator for this facility. The license shall be issued in accordance with Title 54.1 of the Code of Virginia and the regulations of the Board for Waterworks and Wastewater Works Operators. The permittee shall notify the Department in writing whenever he is not complying, or has grounds for anticipating he will not comply with this requirement. The notification shall include a statement of reasons and a prompt schedule for achieving compliance.

5. Reliability Class

The permitted treatment works shall meet Reliability Class I.

6. CTC and CTO Requirement

In accordance with *Sewage Collection and Treatment* regulation (9VAC25-790), the permittee shall obtain a Certificate to Construct (CTC) and a Certificate to Operate (CTO) from the Department of Environmental Quality prior to constructing wastewater treatment works and operating the treatment works, respectively. Non-compliance with the CTC or CTO shall be deemed a violation of the permit.

7. Water Quality Criteria Reopener

Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

8. Water Quality Criteria Monitoring

The permittee shall monitor the effluent at Outfall 001 for the substances noted in Attachment A, "Water Quality Criteria Monitoring" according to the indicated analysis number, quantification level, sample type and frequency. Monitoring shall be initiated within 6 months of the Certificate to Operate the 0.5 MGD flow tier. Using Attachment A as the reporting form, the data shall be submitted with the next application for reissuance, which is due at least 180 days prior to the expiration date of this permit. Monitoring and analysis shall be conducted in accordance with 40 CFR Part 136 or alternative EPA approved methods. It is the responsibility of the permittee to ensure that proper QA/QC protocols are followed during the sample gathering and analytical procedures. The DEQ will use these data for making specific permit decisions in the future. This permit may be modified or, alternatively, revoked and reissued to incorporate limits for any of the substances listed in Attachment A.

9. Sludge Reopener

The Board may promptly modify or revoke and reissue this permit if any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the Clean Water Act is more stringent than any requirements for sludge use or disposal in this permit, or controls a pollutant or practice not limited in this permit.

10. Sludge Use and Disposal

The permittee shall conduct all sewage sludge use or disposal activities in accordance with the Sludge Management Plan (SMP) approved with the issuance of this permit. Any proposed changes in the sewage sludge use or disposal practices or procedures followed by the permittee shall be documented and submitted for DEQ-NRO approval 90 days prior to the effective date of the changes. Upon approval, the revised SMP becomes an enforceable part of the permit. The permit may be modified or alternatively revoked and reissued to incorporate limitations or conditions necessitated by substantive changes in sewage sludge use or disposal practices.

11. Total Maximum Daily Load (TMDL) Reopener

This permit shall be modified or alternatively revoked and reissued if any approved wasteload allocation procedure, pursuant to Section 303(d) of the Clean Water Act, imposes wasteload allocations, limits or conditions on the facility that are not consistent with the permit requirements.

12. E3/E4

The annual average concentration limitations for Total Nitrogen and/or Total Phosphorus are suspended during any calendar year in which the facility is considered by DEQ to be a participant in the Virginia Environmental Excellence Program in good standing at either the Exemplary Environmental Enterprise (E3) level or the Extraordinary Environmental Enterprise (E4) level, provided that the following conditions have also been met:

- a. The facility has applied for (or renewed) participation, been accepted, maintained a record of sustained compliance and submitted an annual report according to the program guidelines;
- b. The facility has demonstrated that they have in place a fully implemented environmental management system (EMS) with an alternative compliance method that includes operation of installed nutrient removal technologies to achieve the annual average concentration limitations; and
- c. The E3/E4 designation from DEQ and implementation of the EMS has been in effect for the full calendar year.

The annual average concentration limitations for Total Nitrogen and/or Total Phosphorus, as applicable, are not suspended in any calendar year following a year in which the facility failed to achieve the annual average concentration limitations as required by b. above.

13. Nutrient Reopener

This permit may be modified or, alternatively, revoked and reissued:

- a. If any approved wasteload allocation procedure, pursuant to Section 303(d) of the Clean Water Act, imposes wasteload allocations, limits or conditions on the facility that are not consistent with the permit requirements;
- b. To incorporate technology-based effluent concentration limitations for nutrients in conjunction with the installation of nutrient control technology, whether by new construction, expansion or upgrade, or
- c. To incorporate alternative nutrient limitations and/or monitoring requirements, should:
 - i. the State Water Control Board adopt new nutrient standards for the water body receiving the discharge, including the Chesapeake Bay or its tributaries, or
 - ii. a future water quality regulation or statute require new or alternative nutrient control.